WHAT IS CLAIMED IS:

1. An optical disc apparatus comprising:

an optical pickup for irradiating a light beam through a two-focus lens onto a signal recording surface of an optical disc including the signal recording surface where digital data is recorded to be optically readable, and for detecting reflection light thereof;

drive control means for driving and controlling the two-focus lens in an optical axis direction of the light beam;

focus error center value measurement means for measuring a focus error center value detected by the optical pickup;

focus error signal generation means for generating a focus error signal subjected to balance-adjustment based on the reflection light and a variable coefficient Kf; and

focus balance control means for causing the drive control means to control a focus balance, based on the focus error center value measured by the focus error center value measurement means, and the focus error signal generated by the focus error signal generation means and subjected to the balance adjustment.

2. The optical disc apparatus according to claim 1, further comprising:

focus bias voltage supply means for supplying the drive control means with a focus bias voltage; and

focus bias control means for causing the focus bias voltage supply means to supply the drive control means with the focus bias voltage, thereby to cause the drive

control means to control a focus bias.

3. The optical disc apparatus according to claim 1, wherein the two-focus lens forms two focus positions by one single objective lens, corresponding to a plurality of discs having respectively different disc substrate thicknesses.

4. The optical disc apparatus according to claim 1, wherein the focus error center value measurement means measures an error center value with the two-focus lens kept sufficiently distant from a just-focus position.

5. The optical disc apparatus according to claim 1, wherein a plurality of values including an initial value used as a reference are set and stored for the coefficient Kf.

6. An optical disc apparatus comprising:

an optical pickup for irradiating a light beam through a two-focus lens onto a signal recording surface of an optical disc including the signal recording surface where digital data is recorded to be optically readable, and for detecting reflection light thereof;

drive control means for driving and controlling the two-focus lens in a radial direction of the optical disc;

tracking error center value measurement means for measuring a tracking error center value detected by the optical pickup;

tracking error signal generation means for generating a tracking error signal subjected to balance-adjustment based on the reflection light and a variable coefficient

Kt; and

tracking balance control means for causing the drive control means to control a tracking balance, based on the tracking error center value measured by the tracking error center value measurement means, and the tracking error signal generated by the tracking error signal generation means and subjected to the balance adjustment.

7. The optical disc apparatus according to claim 6, further comprising:

tracking bias voltage supply means for supplying the drive control means with a tracking bias voltage; and

tracking bias control means for causing the tracking bias voltage supply means to supply the drive control means with the tracking bias voltage, thereby to cause the drive control means to control a tracking bias.

8. The optical disc apparatus according to claim 6, wherein the two-focus lens forms two focus positions by one single objective lens, corresponding to a plurality of discs having respectively different disc substrate thicknesses.

9. The optical disc apparatus according to claim 6, wherein the tracking error center value measurement means measures an error center value with the two-focus lens kept sufficiently distant from a just-focus position.

10. The optical disc apparatus according to claim 6, wherein a plurality of values including an initial value used as a reference are set and stored for the coefficient Kt.

11. An optical disc apparatus comprising:

an optical pickup for irradiating a light beam through an objective lens onto a signal recording surface of an optical disc including the signal recording surface where digital data is recorded to be optically readable, and for detecting reflection light thereof;

focus error signal detection means for detecting a focus error signal, based on the reflection light detected by the optical pickup;

focus zero-cross detection signal detection means for detecting a focus zero-cross detection signal, based on the focus error signal detected by the focus error signal detection means; and

drive control means for driving and controlling the objective lens in an optical axis direction of the light beam,

wherein, if the objective lens is being driven at a predetermined speed in a direction in which a distance from the optical disc is shortened, the drive control means stops the objective lens moving closer to the optical disc upon elapse of a predetermined time period from when the focus zero-cross detection signal which has been by the focus zero-cross detection signal detection means is not detected any more, and if the objective lens is being driven after the stopping of the objective lens, in a direction in which the distance from the optical disc is increased, the drive control means controls a focus position of the light beam irradiated from the optical pickup to be focused on the signal recording surface of the optical disc, based on the focus zero-cross detection signal.

12. The optical disc apparatus according to claim 11, wherein if the objective lens is being driven at a predetermined speed in a direction in which a distance from the optical disc is shortened, the drive control means stops the objective lens moving closer to the optical disc upon elapse of a predetermined time period from when the focus zero-cross detection signal which has been detected by the focus zero-cross detection signal detection means is not detected any more, and if the objective lens is being driven after the objective lens is sopped for a predetermined time, in a direction in which the distance from the optical disc is increased, the drive control means controls a focus position of the light beam irradiated from the optical pickup to be focused on the signal recording surface of the optical disc, based on the focus zero-cross detection signal.

13. The optical disc apparatus according to claim 11, wherein the objective lens is the two-focus lens which forms two focus positions in an optical axis direction by one single objective lens, corresponding to a plurality of discs having respectively different disc substrate thicknesses.

14. An optical disc apparatus comprising:

an optical pickup for irradiating a light beam through an objective lens onto a signal recording surface of an optical disc including the signal recording surface where digital data is recorded to be optically readable, and for detecting reflection light thereof;

pull-in signal detection means for detecting a pull-in signal, based on a total

light amount of the reflection light detected by the optical pickup;

FOK signal detection means for detecting an FOK signal, based on the pull-in signal detected by the pull-in signal detection means; and

drive control means for driving and controlling the objective lens in an optical axis direction of the light beam,

wherein, if the objective lens is being driven at a predetermined speed in a direction in which a distance from the optical disc is shortened, the drive control means stops the objective lens moving closer to the optical disc upon elapse of a predetermined time period from when the FOK signal which has been by the FOK signal detection means is not detected any more, and if the objective lens is being driven after the stopping of the objective lens, in a direction in which the distance from the optical disc is increased, the drive control means controls a focus position of the light beam irradiated from the optical pickup to be focused on the signal recording surface of the optical disc, based on the FOK signal.

15. The optical disc apparatus according to claim 14, wherein if the objective lens is being driven at a predetermined speed in a direction in which a distance from the optical disc is shortened, the drive control means stops the objective lens moving closer to the optical disc upon elapse of a predetermined time period from when the FOK signal which has been detected by the FOK signal detection means is not detected any more, and if the objective lens is being driven after the objective lens is sopped for a predetermined time in a direction in which the distance from the optical

disc is increased, the drive control means controls a focus position of the light beam irradiated from the optical pickup to be focused on the signal recording surface of the optical disc, based on the FOK signal.

16. The optical disc apparatus according to claim 14, wherein the objective lens is a two-focus lens which forms two focus positions in an optical axis direction by one single objective lens, corresponding to a plurality of discs having respectively different disc substrate thicknesses.

17. An optical disc apparatus comprising:

an optical pickup for irradiating a light beam through an objective lens onto a signal recording surface of an optical disc including the signal recording surface where digital data is recorded to be optically readable, and for detecting reflection light thereof;

focus error signal detection means for detecting a focus error signal, based on the reflection light detected by the optical pickup;

focus zero-cross detection signal detection means for detecting a focus zero-cross detection signal, based on the focus error signal detected by the focus error signal detection means;

pull-in signal detection means for detecting a pull-in signal, based on a total light amount of the reflection light detected by the optical pickup;

FOK signal detection means for detecting an FOK signal, based on the pull-in signal detected by the pull-in signal detection means; and

drive control means for driving and controlling the objective lens in an optical axis direction of the light beam,

wherein, if the objective lens is being driven at a predetermined speed in a direction in which a distance from the optical disc is shortened, the drive control means stops the objective lens moving closer to the optical disc upon elapse of a predetermined time period from when the focus zero-cross detection signal which has been by the focus zero-cross detection signal detection means or the FOK signal which has been detected by the FOK signal detection means is not detected any more, and if the objective lens is being driven after the stopping of the objective lens, in a direction in which the distance from the optical disc is increased, the drive control means controls a focus position of the light beam irradiated from the optical pickup to be focused on the signal recording surface of the optical disc, based on the focus zero-cross detection signal and the FOK signal.

18. The optical disc apparatus according to claim 17, wherein if the objective lens is being driven at a predetermined speed in a direction in which a distance from the optical disc is shortened, the drive control means stops the objective lens moving closer to the optical disc upon elapse of a predetermined time period from when the focus zero-cross detection signal which has been detected by the focus zero-cross detection signal detection means or the FOK signal which has been detected by the FOK signal detection means is not detected any more, and if the objective lens is being driven after the objective lens is sopped for a predetermined time, in a direction in

which the distance from the optical disc is increased, the drive control means controls a focus position of the light beam irradiated from the optical pickup to be focused on the signal recording surface of the optical disc, based on the focus zero-cross detection signal and the FOK signal.

19. The optical disc apparatus according to claim 17, wherein the objective lens is a two-focus lens which forms two focus positions in an optical axis direction, corresponding to a plurality of discs having respectively different disc substrate thicknesses, by one single objective lens.